

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

3SHAPE A/S,

Plaintiff,

v.

CARESTREAM DENTAL, LLC,

Defendant.

Civil Action No. 6:21-cv-1110

**COMPLAINT**

Plaintiff 3Shape A/S (“Plaintiff,” “3Shape” or “3Shape A/S”), for its complaint against Defendant Carestream Dental, LLC (“Defendant” or “Carestream”), hereby alleges and states the following:

**THE PARTIES**

1. Plaintiff 3Shape A/S is a Danish corporation with a principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.
2. 3Shape A/S markets industry-leading intraoral scanners, including, in the United States, Trios 3 and Trios 4 (collectively with their predecessors, Trios and Trios Color, “Trios”). The Trios is sold in the United States.
3. On information and belief, Carestream is a limited liability corporation with a principal place of business at 3625 Cumberland Boulevard, Suite 700, Atlanta, Georgia, 30339.
4. Carestream makes, uses, sells, and offers for sale in the United States and/or imports into the United States its CS 3700 and CS 3600 intraoral scanners and related software

including but not limited to, CS ScanFlow, CS Imaging, and CS Model+ that embody systems and/or methods for intraoral scanning for dental applications.

5. On information and belief, Carestream also makes, uses, sells and offers for sale in the United States and/or imports into the United States its CS 3800 intraoral scanners (collectively with the CS 3600 and CS 3700, the “CS Scanners”) and related software that embody systems and/or methods for intraoral scanning for dental applications (collectively with the CS Scanners, and other products with similar features, the “Accused Products”).

#### **JURISDICTION AND VENUE**

6. This lawsuit is an action for patent infringement arising under the patent laws of the United States, Title 35 of the United States Code.

7. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

8. This Court has personal jurisdiction over Carestream because it has, directly and/or through its agents and/or intermediaries, committed acts and continues to commit acts of patent infringement within Texas giving rise to this action and has established minimum contacts with Texas such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice. Carestream, directly and indirectly at least through agents and intermediaries, has committed and continues to commit acts of infringement in this District by, among other things, making, using, selling, offering to sell, and importing the Accused Products.

9. On information and belief, Carestream regularly conducts business in Texas, including in this District, and purposefully avails itself of the privileges of conducting business in Texas and this District. In particular, on information and belief, Carestream and/or its agents and/or intermediaries, make, use, import, offer for sale, sell and/or advertise their products and affiliated services in Texas and this District, including but not limited to its CS 3800, CS 3700,

and CS 3600 intraoral scanners and related software, sufficient to give rise to jurisdiction. On information and belief, Defendant has placed and continues to place, infringing products into the stream of commerce, via an established distribution channel, with the knowledge and/or understanding that such products are sold in the United States, including in Texas and specifically including in this District.

10. On information and belief, Carestream derives substantial revenue from the sale of infringing products distributed within Texas and/or expects or should reasonably expect its actions to have consequences in Texas. In addition, on information and belief, Carestream knowingly induces, and continues to knowingly induce, infringement of the Asserted Patents within Texas by offering for sale, selling, and/or contracting with others to market infringing products with the intent to facilitate infringing use of the products by others within Texas and by creating and/or disseminating product information and other materials providing instruction for infringing use.

11. Carestream's infringing activity has led to foreseeable harm and injury to 3Shape.

12. Venue for these claims is proper under 28 U.S.C. § 1391 and 28 U.S.C. § 1400(b).

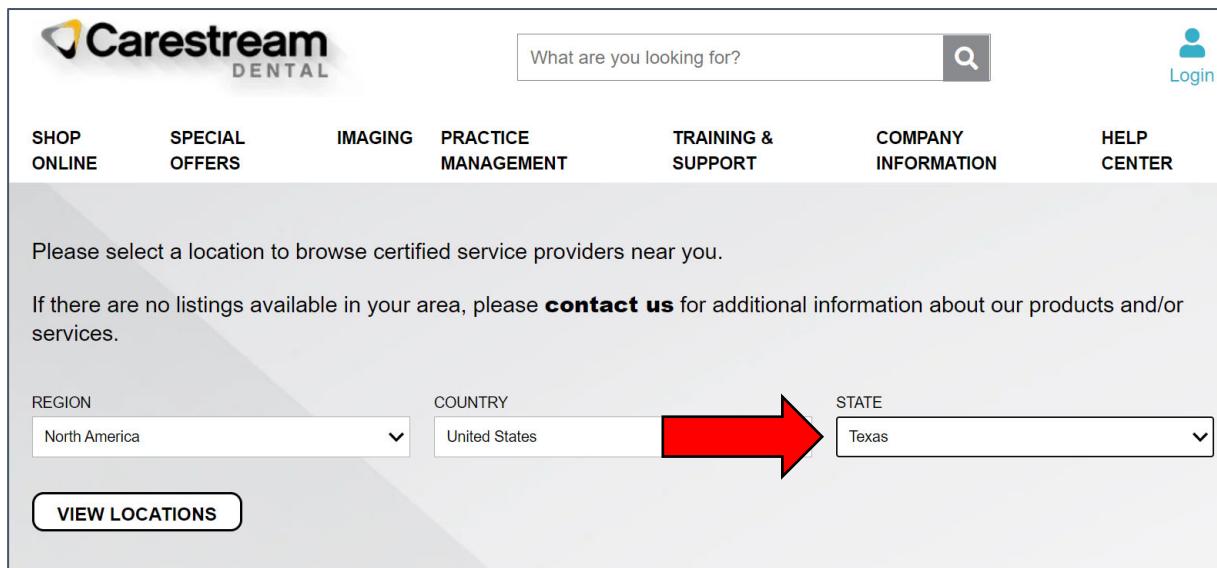
13. Venue is proper in this District under 28 § 1400(b) because, among other things, Defendant has transacted business in this District and has committed acts of infringement in and has a regular and established place of business in this District. For example, on information and belief, Carestream conducts its business of the distribution of its products through its authorized dealers in this District, directly and/or indirectly, to and through Burkhardt Dental Supply located at 4616 W. Howard Lane, Ste. 970, Austin, Texas 78728. Burkhardt Dental Supply in this District is held out to the consuming public as a place of Carestream where Carestream, through its dealer, sells Carestream products.

14. On information and belief, Burkhart is authorized to market, sell, install and service nearly all of Carestream Dental's equipment, accessories and imaging software. *See, e.g.*, <https://www.burkhartdental.com/press-release-carestream-dental-and-burkhart-partner-to-deliver-digital-technology-to-more-doctors/>.

15. On information and belief, Carestream supports and markets its products to customers and potential customers, who reside in this District through various means, including through: sales, employees residing in this District; its website; its YouTube Videos; and its attendance and promotion of its products at Texas-based trade shows and professional conferences.

16. Carestream markets to its customers and prospective customers residing in this District via its website [www.carestreamdental.com](http://www.carestreamdental.com). On information and belief, Carestream has directed its customers to service providers in this District for service and repair.

17. For example, Carestream customers can use Carestream's website to search for certified service providers, including national service providers and preferred labs, in and near this District.



The screenshot shows the Carestream Dental website's search interface. At the top, there is a logo, a search bar with the placeholder "What are you looking for?", and a "Login" button. Below the search bar, there are several navigation links: "SHOP ONLINE", "SPECIAL OFFERS", "IMAGING", "PRACTICE MANAGEMENT", "TRAINING & SUPPORT", "COMPANY INFORMATION", and "HELP CENTER". A large search bar is centered on the page with the placeholder "Please select a location to browse certified service providers near you." Below this, there is a message: "If there are no listings available in your area, please **contact us** for additional information about our products and/or services." At the bottom, there are three dropdown menus: "REGION" (set to "North America"), "COUNTRY" (set to "United States"), and "STATE" (set to "Texas"). A red arrow points from the "COUNTRY" dropdown to the "STATE" dropdown. At the very bottom, there is a "VIEW LOCATIONS" button.

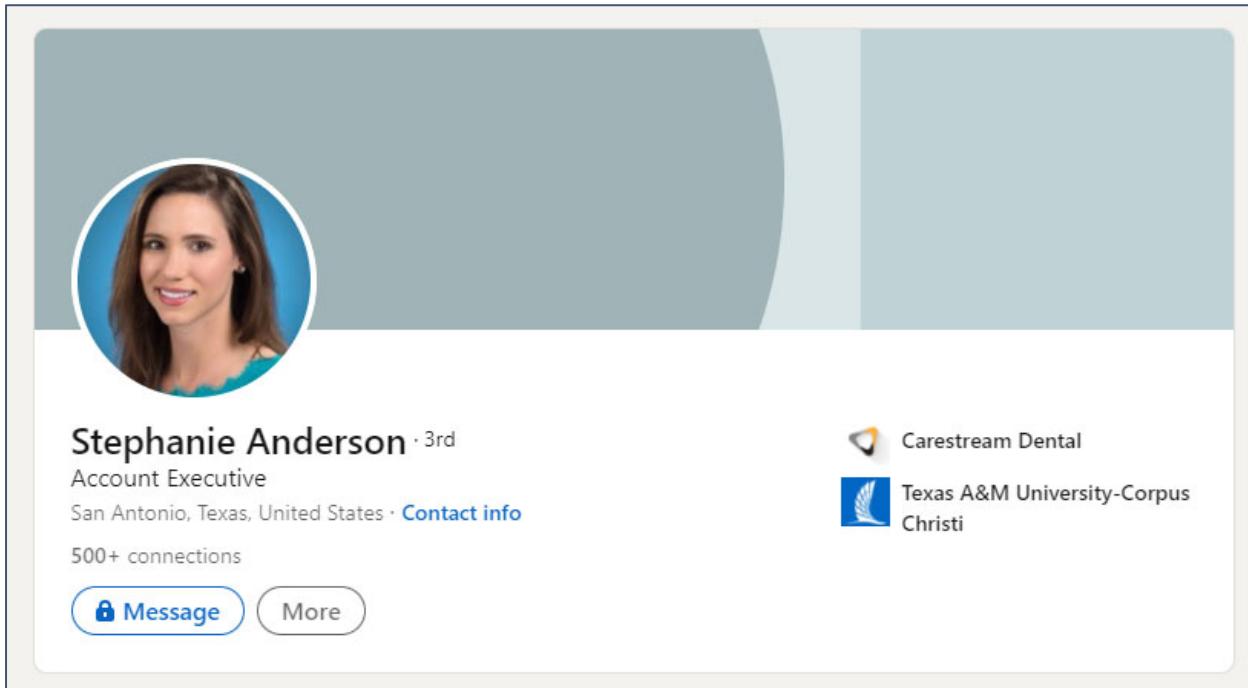
(See, e.g., National Service Provider Locator (*available at* <https://www.carestreamdental.com/en-us/locations/>) (annotation added).)

18. On information and belief, Carestream has listed National Service Providers in this District on its website, including at least Benco Dental Supply Company in Elgin, Texas. On information and belief, these National Service Providers install, support, and service Carestream dental equipment.

19. Carestream lists twenty-six (26) different preferred labs located throughout Texas on its website at <https://www.carestreamdental.com>. At least five of these twenty-six (26) preferred labs are located in the Western District of Texas, including: (1) B & R Dental Laboratory located in San Antonio, Texas, (2) Oral Arts Dental in San Antonio, Texas; (3) CenTex Dental Lab located in Waco, Texas; (4) Summit Dental Laboratory located in Waco, Texas; and (5) Star Dental Laboratory located in Cedar Park, Texas. On information and belief, these preferred dental labs are the preferred labs for receiving scans from Carestream products, including the infringing CS scanners. On information and belief, Carestream directs owners of its products to its preferred labs located in this District.

20. On information and belief, Carestream contracts with employees residing in this District to sell, train, and promote its products, including but not limited to the accused CS Scanners.

21. On information and belief, Carestream contracts with one or more employees residing in this District whose titles include “Account Executive.” The job description for “Account Executives,” as evidenced by openings for the position in other locations, includes being “responsible for Dental Sales with a focus on Digital Imaging Equipment and Practice Management Solutions Sales for all specialties in the Dental Marketplace.” *See, e.g.*, Account Executive, Los Angeles, Carestream Career Posting (*available at*



A screenshot of a LinkedIn profile for Stephanie Anderson. The profile picture is a circular image of a woman with long brown hair, smiling. The background of the profile is a light blue gradient. Below the profile picture, the name "Stephanie Anderson" is displayed in bold black text, followed by "3rd". Underneath the name, the title "Account Executive" and the location "San Antonio, Texas, United States" are shown. A "Contact info" link is also present. To the right of the profile, there are two company logos: "Carestream Dental" with a yellow and orange logo, and "Texas A&M University-Corpus Christi" with a blue and white logo. Below the profile picture, there are two buttons: "Message" with a blue background and "More" with a white background. The entire LinkedIn profile is enclosed in a light gray box.

(*See, e.g.*, Stephanie Anderson LinkedIn Profile (*available at*

22. On information and belief, Carestream contracts with at least one employee who resides in the Western District of Texas and operates as a “Director of Sales” for Carestream.

A circular profile picture of a man with short brown hair, wearing a dark suit jacket, a white shirt, and a striped tie. He is smiling and looking directly at the camera. The background of the profile picture shows an office environment with shelves and papers.

**Reagan Walker** · 3rd  
Director of Sales, Elite DSO-West at Carestream Dental  
Austin, Texas, United States · [Contact info](#)

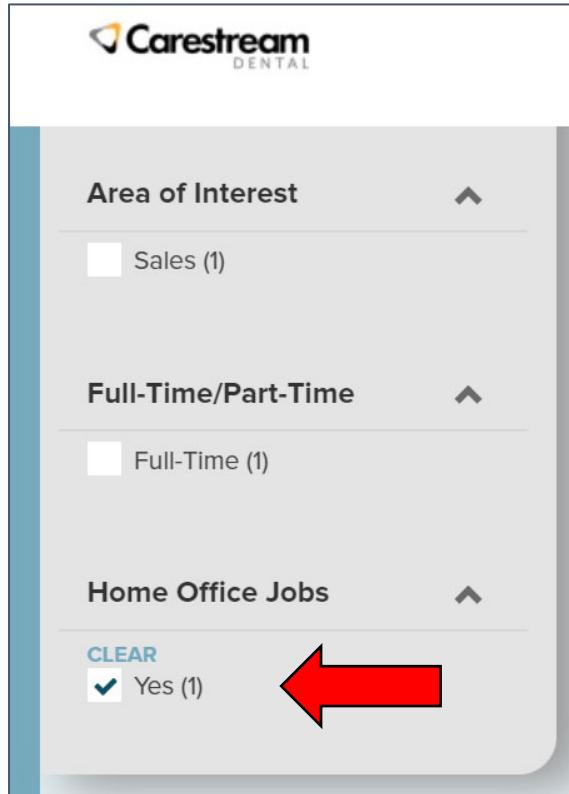
500+ connections

[Message](#) [More](#)

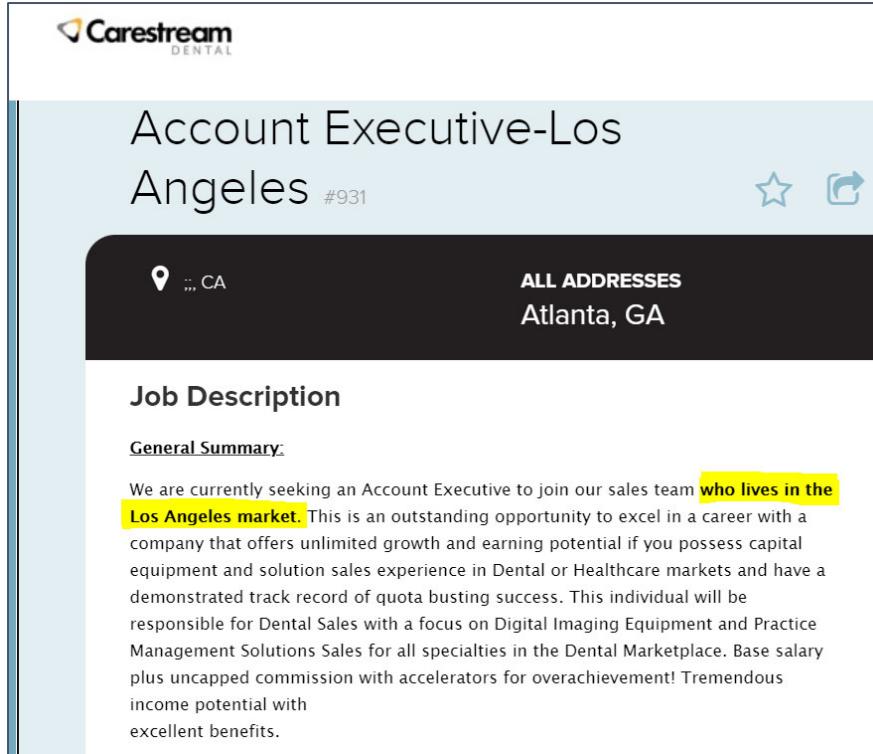
 Carestream Dental  
 Texas State University

(See, e.g., Reagan Walker LinkedIn Profile (available at <https://www.linkedin.com/in/reagan-walker-a489a214/>). )

23. On information and belief, Carestream actively seeks and recruits employees living in this District to work from “home offices.” For example, on information and belief, at least Carestream “Account Executives” residing outside the state of Georgia conduct business from “home offices.”



(See, e.g., Carestream Careers (*available at* <https://recruiting.adp.com/srccar/public/RTI.home?c=2153813&d=ExternalCareerSite#/>) (annotation added).)



The screenshot shows a job listing for 'Account Executive-Los Angeles' on the Carestream DENTAL website. The job is located in 'CA' (California). The posting includes a 'Job Description' section with a 'General Summary' that describes the role as an outstanding opportunity to excel in a career with a company offering unlimited growth and earning potential. The summary highlights the need for experience in Dental or Healthcare markets, a demonstrated track record of quota busting success, responsibility for Dental Sales with a focus on Digital Imaging Equipment and Practice Management Solutions Sales for all specialties in the Dental Marketplace, and excellent benefits. The posting is marked with a star and a 'Share' icon.

(See, e.g., Account Executive, Los Angeles, Carestream Career Posting (*available at* <https://recruiting.adp.com/srccar/public/RTI.home?c=2153813&d=ExternalCareerSite#/>) (annotation added).)

24. On information and belief, Carestream's employees residing in Texas conduct business from their home offices.

#### THE ASSERTED PATENTS

25. U.S. Patent No. RE48,221 (the “’221 patent”) was validly issued by the United States Patent and Trademark Office (“USPTO”) on September 22, 2020 to listed inventors Henrik Öjelund, David Fischer, and Karl-Josef Hollenbeck.

26. 3Shape A/S is the owner by assignment of the entire right, title, and interest in and to the ’221 patent, entitled “System with 3D user interface integration,” a true and correct copy of which is attached hereto as Exhibit A. Evidence of the assignment of the ’221 patent has been recorded with the USPTO at Reel/Frame 031241/0837. 3Shape A/S is listed on the face of

the '221 patent as assignee. 3Shape is the sole owner of the '221 patent and of all rights of recovery thereunder for past and future infringement.

27. U.S. Patent No. 10,695,151 (the "'151 patent") was validly issued by the USPTO on June 30, 2020 was duly and lawfully issued by the USPTO on June 30, 2020, to listed inventors Bo Esbech, Rune Fisker, Lars Heriksen, and Tais Clausen.

28. 3Shape A/S is the owner by assignment of the entire right, title, and interest in and to the '151 patent, entitled "Detecting Tooth Shade," a true and correct copy of which is attached hereto as Exhibit B. Evidence of the assignment of the '151 patent to 3Shape A/S is recorded with the USPTO at Reel/Frame 044834/0161. 3Shape A/S is listed on the face of the '151 patent as assignee. 3Shape is the sole owner of the '151 patent and of all rights of recovery thereunder for past and future infringement.

29. U.S. Patent No. 11,076,146 (the "'146 patent") was validly issued by the USPTO on July 27, 2021. 3Shape A/S is the owner by assignment of the entire right, title, and interest in and to the '146 patent, entitled "Focus Scanning Apparatus," a true and correct copy of which is attached hereto as Exhibit C. Evidence of the assignment of the '146 patent to 3Shape A/S is recorded with the USPTO at Reel/Frame 055651/0277. 3Shape A/S is listed on the face of the '146 patent as assignee. 3Shape is the sole owner of the '146 patent and of all rights of recovery thereunder for past and future infringement.

## **BACKGROUND**

30. 3Shape is a pioneer developer of dental equipment and software for use by dental professionals and laboratories since 2004. In particular, 3Shape's products include Trios, along with a number of other dental hardware and software products.

31. Trios has now received the Cellerant "Best of Class" award for a record-breaking nine years in a row. Trios was also named the most accurate intraoral scanner in an independent

American Dental Association study. Trios has received numerous other industry awards and is widely recognized for its innovative dental technologies.

32. In March 2017, 3Shape launched its Trios 3 Wireless intraoral scanner at the International Dental Show. The Trios 3 Wireless was the first wireless intraoral scanner on the market.

33. On information and belief, defendant Carestream designs, develops, manufactures, and markets the CS Scanners, including but not limited to the CS 3800, CS 3700, and CS 3600 intraoral scanners, as well as related software, including but not limited to CS ScanFlow, CS Imaging, and CS Model+.

34. On information and belief, Carestream developed, made, and sold the infringing Accused Products despite having knowledge of 3Shape's patents at issue based on, at a minimum, Carestream's knowledge of the 3Shape intraoral scanners and software sold in the market.

35. On information and belief, Carestream has been aware of at least the '146 patent since August 28, 2021, when 3Shape sent a letter to Carestream informing it of its infringing activities. (Ex. D (Stakemann 8/28/2021 email to Wogan).)

**COUNT I**  
**(Infringement of U.S. Patent No. RE48,221)**

36. 3Shape restates and incorporates by reference its allegations in paragraphs 1-35 as if fully restated in this paragraph.

37. The '221 patent discloses inventions related to a hand-held optical scanner for scanning a 3D environment that includes a motion sensor to remotely control the display connected to the hand-held optical scanner. In particular, the '221 patent uses the motion detected by the motion sensor to control (e.g., rotate) the 3D environment represented on the

display. One advantage of this remote control of the display is that it avoids the risk of cross-contamination due to interaction with other user interface devices (e.g., mice, touch screens), and it also provides a convenient, simplified user interface that allows for seamless intraoral scanning and control of the virtual model display.

38. On information and belief, Carestream has directly, literally under and/or equivalently under the doctrine of equivalents, infringed at least one claim of the '221 patent under 35 U.S.C. § 271(a), by making, using, selling, offering for sale in the United States and/or importing into the United States, without authority, the Accused Products. As set forth herein, the Accused Products meet each and every element of one or more claims of the '221 patent.

39. Carestream has been and is now directly infringing, literally and/or under the doctrine of equivalents, at least claim 1 of the '221 patent.

40. By way of illustration only, the Accused Products, including at least the CS 3800 intraoral scanner and CS ScanFlow software (collectively the "CS 3800 Scanning System"), meet each and every element of claim 1 of the '221 patent.

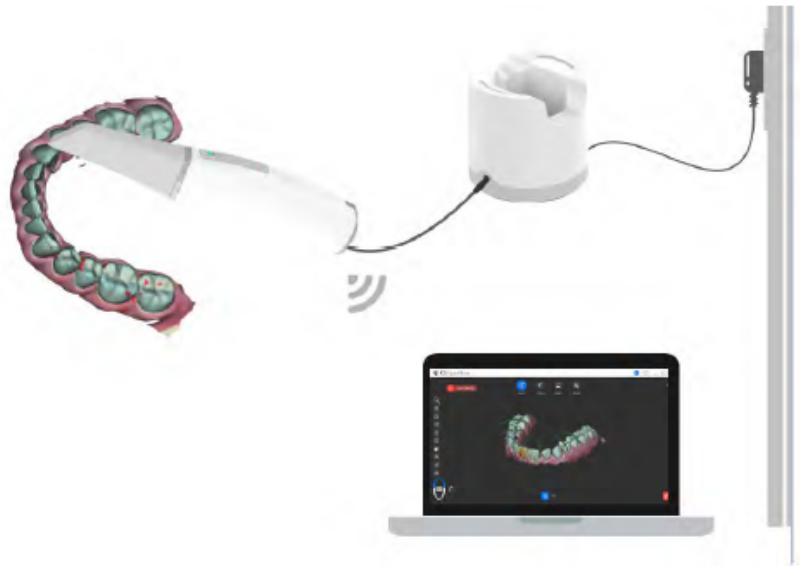
41. The CS 3800 Scanning System is "[a] scanning system for scanning a 3D environment." That system comprises "[1] a handheld device including an optical scanner, wherein the 3D environment to be scanned is selected by pointing the optical scanner at the 3D environment; and [2] at least one display remotely connected to the handheld device, [3] wherein the handheld device is adapted for performing at least one scanning action in a physical 3D environment, and the at least one display is adapted for visually representing the physical 3D environment; and [4] the handheld device includes a 3D user interface for remotely controlling the display to adjust the view with which the 3D environment is represented on the display, [5]

wherein the handheld device includes at least one motion sensor, and [6] wherein the at least one motion sensor is a sensor that directly detects motion.” (Ex. A at col. 15 l. 65 – col. 16 l. 18.)

42. Public documentation about Carestream’s CS 3800 Scanning System illustrates how it satisfies all elements of representative claim 1 of the ’221 patent. By way of example only, the information from user guides, brochures, training videos, assorted webpages, and marketing documents some of which are reproduced below show that the CS 3800 Scanning System contains the infringing functionality.

43. The CS 3800 Scanning System includes the CS 3800 handheld optical scanner, which is used to scan within a patient’s mouth by maneuvering the handheld scanner.

**Figure 7 Handpiece Charging Station with Backup Power Cable**



(See, e.g., CS 3800 User and Installation Guide (“CS 3800 User Guide”) at 7 (available at <https://www.carestreamdental.com/en-us/resource-library/?type=Hardware&family=CS%203800&version=CS%203800>).(

Our scanning process is straightforward and intuitive. A simplified user interface specifically designed for touch screen navigation allows you to enjoy more direct and intuitive interaction with the software.



(See, e.g., CS ScanFlow Brochure at 4 (available at <https://www.carestreamdental.com/en-us/resource-library/?type=Software&family=Acquisition%20Software&version=CS%20ScanFlow>).(



(See, e.g., CS 3800 Self Scan Demonstration (*available at* <https://www.youtube.com/watch?v=IZnORkUd7qs>.)

## Indications for Use

The CS 3800 is a digital optical scanning device used to record the topographic characteristics of teeth or dental impressions in three dimensions. The resulting topographic impressions are intended for use in the computer-aided design and manufacturing of dental restorative prosthetic devices, dental implant prosthetic devices, and orthodontic models.

## Clinical Benefits and Performance Characteristics

Carestream Dental's intraoral scanners benefit a dental practice by enabling practitioners to acquire digital impressions with the quality and accuracy required for digital CAD/CAM dental applications. The actual performance of the device is dependent on the user's training and operating execution. The user is solely responsible for the accuracy, completeness, and adequacy of the acquired data.

(See, e.g., CS 3800 Safety, Regulatory and Technical Specifications User Guide (“CS 3800 Safety and Regulatory Guide”) at 1 (*available at* <https://www.carestreamdental.com/en-us/resource-library/?type=Hardware&family= CS%203800&version=CS%203800>.)

**CS 3800**  
**New Optical System  
with rectangle aperture**

- Depth of field (DOF) is the distance between the nearest and the farthest objects that are in acceptably **sharp focus** in an image.

Closest plane of image sharpness  
Best plane of image sharpness  
Furthest plane of image sharpness  
Depth of field of CS 3800 is 18 mm

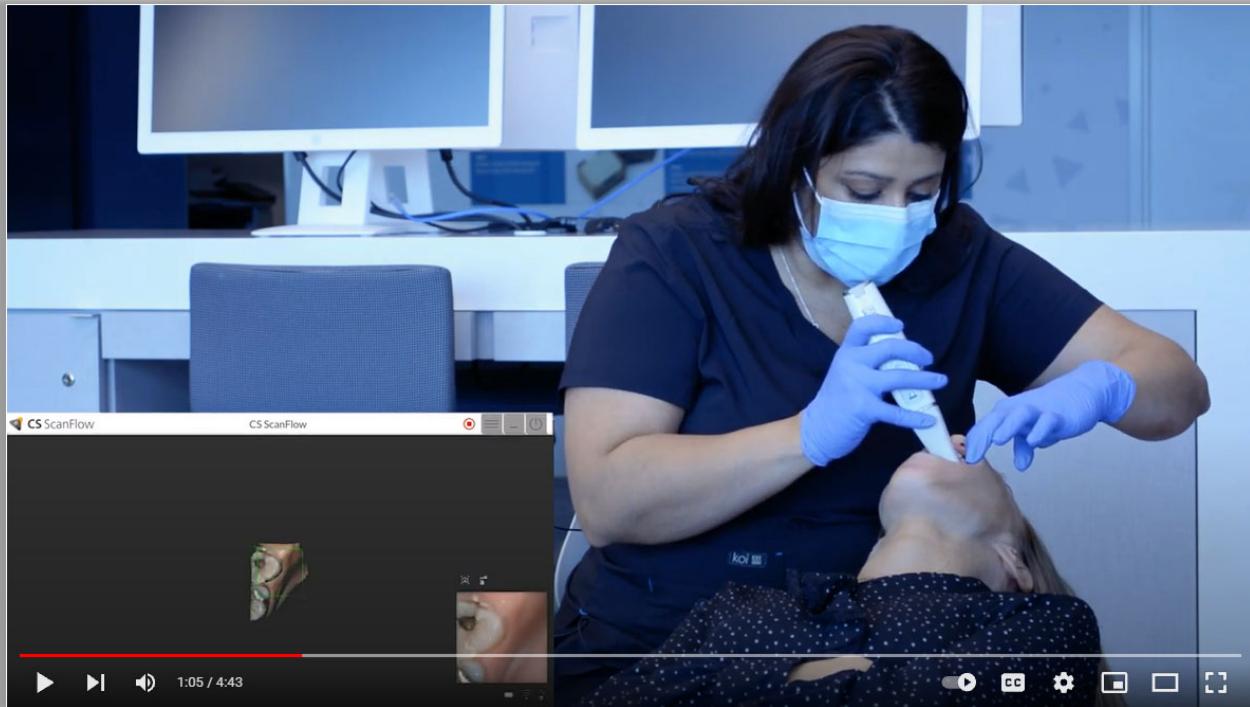
**Carestream DENTAL** | ©2020 Carestream Dental LLC

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(See, e.g., CS 3800 PowerPoint - Freedom at your fingertips (“CS 3800 PowerPoint”) at slide 15

(available at <https://www.360v.co.uk/carestream-cs3800/>.)

44. The CS 3800 Scanning System selects the 3D environment to be scanned (e.g., a patient’s intraoral cavity) by pointing the optical scanner.



(See, e.g., CS 3800 Scan Demo (“CS 3800 Scan Demo”) (available at

<https://www.youtube.com/watch?v=BapFiLdehes>.)

## Speed and Accuracy



### SUPER-FAST SCANNING

With a proven scanning time of 25 seconds for a single arch,\* the CS 3800’s capture speed frees up more time for focusing on patients.



### A SMOOTHER SCANNING EXPERIENCE

The CS 3800’s enlarged 16 mm x 14 mm field-of-view and significantly broader 21 mm depth of field capture the details you need—even in interproximal areas and subgingival margins.

(See, e.g., CS 3800 Product Brochure (“CS 3800 Brochure”) at 4 (available at

<https://www.carestreamdental.com/en-us/resource-library/?type=Hardware&family=CS%203800&version=CS%203800>.)

45. The CS 3800 Scanning System includes a display that is remotely connected to the handheld scanning device.

## Computer System Requirements

If necessary, you must update your computer system configuration.

Item	Recommended	Minimum
CPU	Laptop: Intel Core i7, 9th generation	Laptop: Intel Core i7-7700HQ, Quad CPU, 2.8 GHz
	Desktop: Intel Core i7, 9th generation	Desktop: Intel Core i7-7700K, Quad CPU, 4.2 GHz
RAM	16 GB RAM	16 GB RAM
Monitor	Screen resolution: 1920 X 1080	Screen resolution: 1920 X 1080
Operating system	Windows 10 Professional, version 1809 or higher	Windows 10 Professional, version 1809 or higher
USB port	USB 3.0 for WiFi adapter	USB 3.0 for WiFi adapter
Video card	Laptop: NVIDIA GeForce RTX 2060, 6 GB memory	Laptop: NVIDIA GeForce GTX 1050 Ti or Quadro P3000 or similar
	Desktop: NVIDIA GeForce GTX 1660Ti, 6 GB memory	Desktop: NVIDIA GeForce GTX1050 Ti or similar
Video card driver	Support OpenGL 4.3 and OpenCL 1.1	Support OpenGL 4.3 and OpenCL 1.1



**Note:** The All-In-One computer system requirement is an exception.

The computer and its screen should be situated in or close to the operating area, in the visual field of the practitioner when using the CS 3800.

(See, e.g., CS 3800 Safety and Regulatory Guide at 28.)

**Figure 7 Handpiece Charging Station with Backup Power Cable**



(See, e.g., CS 3800 User Guide at 7.)

**Powered by CS ScanFlow**

CS ScanFlow software is the acquisition software paired with the CS 3800. Free yourself from imposed procedures: there is no need to choose a workflow when starting to scan – simply grab the handpiece and scan, then decide later which indication to apply to the data set. A four-step process keeps you on track from beginning to end.



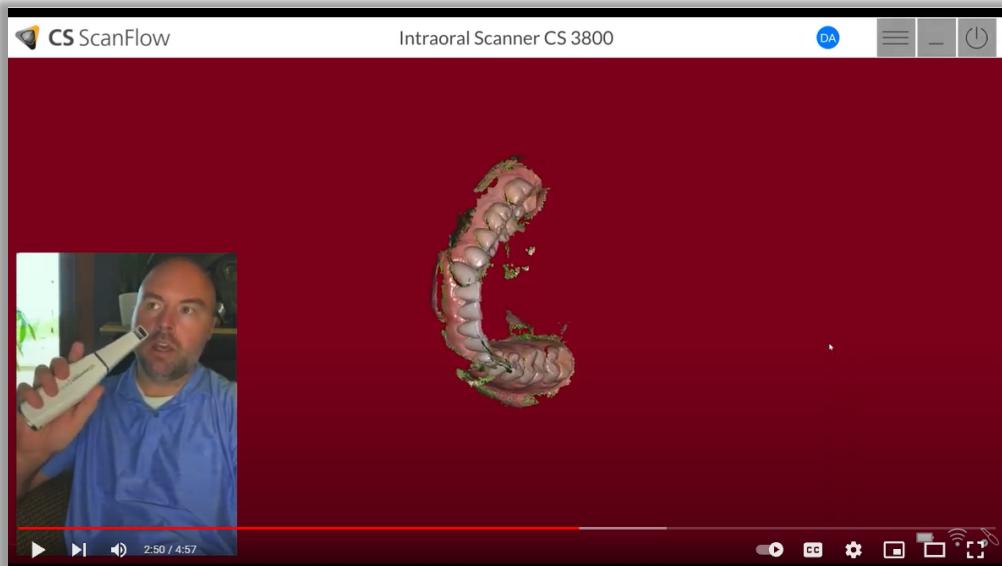
(See, e.g., CS 3800 Product Information (*available at* <https://www.carestreamdental.com/en-us/csd-products/intraoral-scanners/cs-3800>).

46. The handheld scanning wand of the CS 3800 Scanning System is adapted for performing a scanning action in the physical 3D environment (e.g., the patient's intraoral cavity), and a display of the CS 3800 Scanning System is adapted for visually representing the physical 3D environment.



(See, e.g., CS 3800 Self Scan Demonstration.)

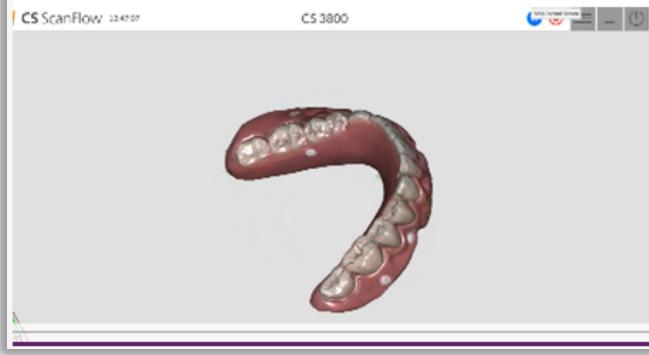
47. The handheld scanning wand of the CS 3800 Scanning System includes a 3D interface for remotely controlling the display to adjust the view of the 3D environment represented on the display.



(Id. at 2:45-3:14 (explaining changing modes to use the scanner as a user interface tool).)

## GESTURE MOTION CONTROL

The digital model rotates as the handpiece moves, so there's no need to use the mouse to put the scan in the appropriate position.



(See, e.g., CS 3800 Product Information (available at <https://www.carestreamdental.com/en-us/csd-products/intraoral-scanners/cs-3800>).

### Using Gesture Motion Control

When you are scanning the upper or lower arch, the CS 3800 handpiece enables you to rotate the 3D model and zoom in and out on the model using only the handpiece, with no need to touch a mouse or keyboard.

To use Gesture Motion Control, do the following:



1 While in Scan mode, quickly press . The scan and light stop.



2 Press and hold for five seconds to activate Motion Control.

3 Tilt the handpiece to manipulate the 3D model.

(See, e.g., CS ScanFlow User Guide (“CS ScanFlow User Guide”) at 38 (*available at <https://www.carestreamdental.com/en-us/resource-library/?type=Software&family=Acquisition%20Software&version=CS%20ScanFlow>*).

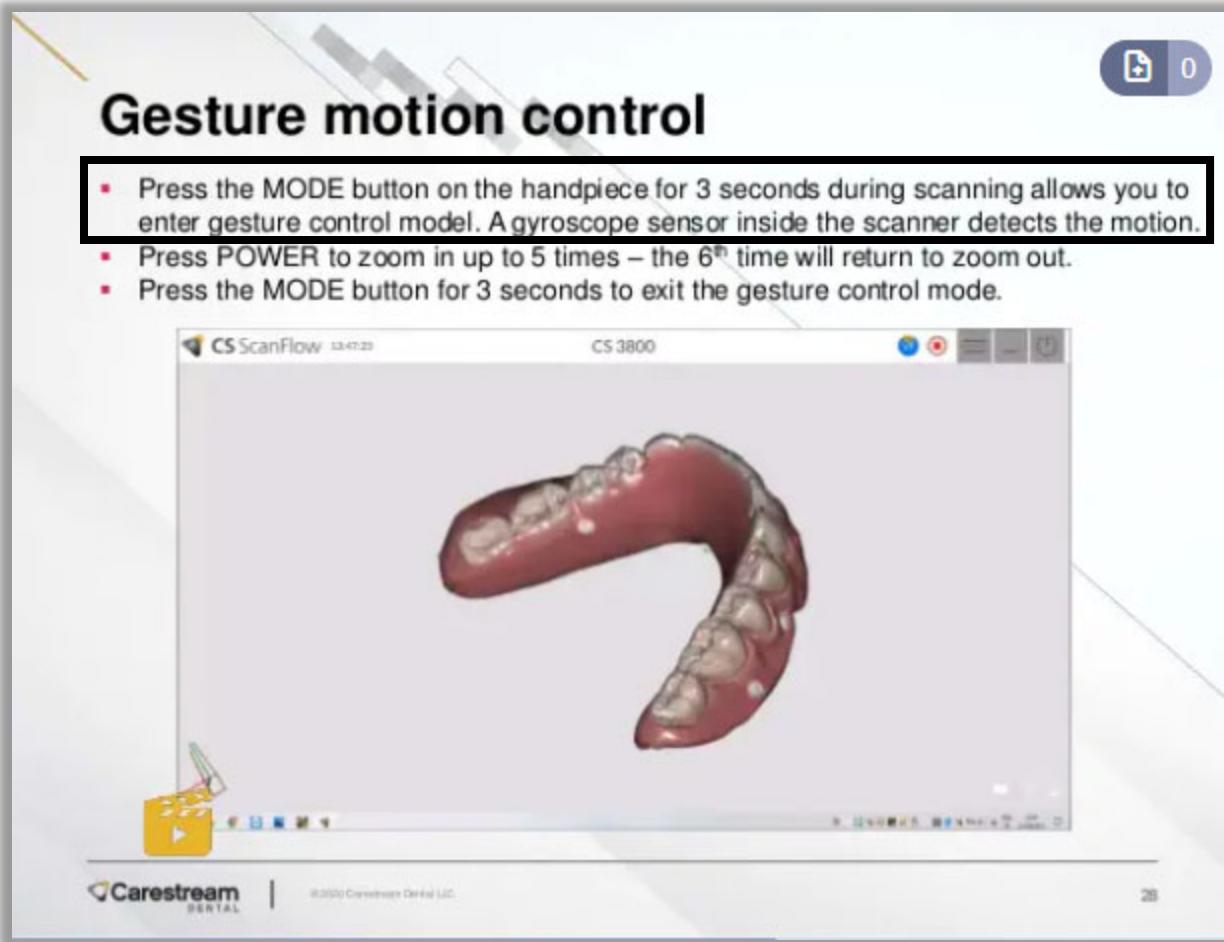
48. The handheld scanning wand of the CS 3800 Scanning System includes at least one motion sensor that directly detects motion.



Few details are known at this stage, but so far this is what we learnt about the new scanner:

- Completely Wireless - battery life up to one hour of scanning
- It can be plugged in using a back up cord if the battery runs out
- The CS 3800 uses a dedicated point-to-point WiFi module
- It uses motion controls within the scanner to enable moving digital models without touching the computer

(See, e.g., New Intraoral Scanner Announcement: Carestream Dental CS 3800 Wireless of July 13, 2021 (*available at <https://instituteofdigitaldentistry.com/news/new-carestream-intraoral-scanner-announced-cs-3800/>*) (annotation added).)



(See, e.g., CS 3800 PowerPoint at slide 28 (annotation added).)

49. Carestream has directly infringed the '221 patent, including by making, using, selling, offering for sale in the United States, and importing into the United States, products that contain the system disclosed in the '221 patent. Carestream uses the patented system as it, for example, tests and/or demonstrates its infringing CS 3800 Scanning System.

50. Carestream has had knowledge of the '221 patent from a date no later than the date of the filing of this Complaint. On information and belief, Carestream had knowledge of the '221 patent prior to the date of the filing of this Complaint by virtue of, for example, prior business dealings between 3Shape and Carestream.

51. Carestream also actively induces and has induced infringement of the '221 patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents, and continues to do so.

52. On information and belief, Carestream directs and/or authorizes its agents, customers, and/or potential customers to make, use, sell, or offer for sale in the United States or import into the United States the Accused Products.

53. On information and belief, Carestream encouraged and facilitated infringement with specific intent and continues to encourage and facilitate infringement with specific intent by, for example, training its customers and potential customers to use the CS 3800 Scanning System in a manner that infringes at least one claim of the '221 patent, promoting the use of the CS 3800 Scanning System in a way that infringes at least one claim of the '221 patent to Carestream's customers and potential customers, and/or disseminating promotional and marketing material and product literature to those customers and potential customers encouraging use of the CS 3800 Scanning System in a manner that infringes at least one claim of the '221 patent. For example, Carestream is aware that the features claimed in the '221 patent are features in the Accused Products and are features used by others that purchase and/or use the Accused products and, therefore, that purchasers and/or end users of the Accused Products have infringed and will infringe the '221 patent.

54. Carestream actively induces infringement of the '221 patent with knowledge and the specific intent to encourage that infringement by, *inter alia*, disseminating the CS 3800 Scanning System and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides and technical information (including but not limited to the materials and videos identified in this Count of the Complaint) to third parties including but

not limited to resellers, distributors, customers, potential customers, dentists, orthodontists, and/or other end users of the CS 3800 Scanning System. Those third parties directly infringe the '221 patent at least by selling, offering to sell, and/or using the CS 3800 Scanning System.

55. Carestream has been and is now contributing to the infringement of the '221 patent under 35 U.S.C. § 271(c), either literally or under the doctrine of equivalents, and continues to do so.

56. Carestream has actively, knowingly, and intentionally contributed to and continues to actively, knowingly, and intentionally contribute to the infringement of the '221 patent by, for example, having sold or offered for sale and continuing to sell or offer for sale the CS 3800 Scanning System within the United States and/or by importing the CS 3800 Scanning System into the United States with knowledge that the infringing technology is especially made and/or especially adapted for use in infringement of the '221 patent, is a material part of the patented invention, and with knowledge that the CS 3800 Scanning System is not a staple article or commodity of commerce suitable for substantial non-infringing use and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the CS 3800 Scanning System do not have any substantial noninfringing uses. On information and belief, Carestream has such knowledge at least because it is aware the claimed features of the '221 patent are used by others including, but not limited to resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of CS 3800 Scanning System.

57. On information and belief, Carestream knew or should have known of the '221 patent and has acted, and continues to act, in an egregious and wanton manner by infringing the '221 patent. On information and belief, Carestream's infringement of the '221 patent has been

and continues to be willful and deliberate. 3Shape is a known pioneer in intraoral scanners with whom Carestream knows and has familiarity. On information and belief, Carestream knowingly developed, has sold, sells and offers to sell the Accused Products in an infringing manner that was known to Carestream or was so obvious that Carestream should have known of its infringement.

58. On information and belief, despite knowing its actions constituted infringement of the '221 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the '221 patent, Carestream nevertheless continued its infringing actions, and continues to make, use and sell the Accused Products after the filing of this complaint.

59. Carestream's acts of infringement have injured and damaged 3Shape and will continue to injure and damage 3Shape.

60. Carestream's actions have caused 3Shape to suffer irreparable harm resulting from the loss of its lawful patent rights and the loss of its ability to exclude others from making, using, selling, offering to sell and importing the inventions of the '221 patent. On information and belief, Carestream will continue these infringing acts unless enjoined by this court.

**COUNT II**  
**(Infringement of U.S. Patent No. 10,695,151)**

61. 3Shape restates and incorporates by reference its allegations in paragraphs 1-60 as if fully restated in this paragraph.

62. The '151 patent discloses inventions related to methods and user interfaces for determining the shade of a patient's tooth. In particular, the '151 patent uses a digital 3D representation of the tooth that includes shape data and texture data and determines a tooth shade value for at least one point on the tooth based on the texture data. One advantage of the patent is

that it allows for a dental restoration, such as a crown or bridge, to be designed and manufactured based on the tooth shape and shade of the patient's natural teeth so that the dental restoration will not appear artificial and deteriorate the aesthetic impression of the patient's smile.

63. On information and belief, Carestream has directly, literally under and/or equivalently under the doctrine of equivalents, infringed at least one claim of the '151 patent under 35 U.S.C. § 271(a), by making, using, selling, offering for sale in the United States and/or importing into the United States, without authority, the Accused Products. By way of illustration only, the CS 3700 and the related software including CS ScanFlow (collectively the "CS 3700 Scanning System") and the CS 3800 Scanning System meet each and every element of one or more claims of the '151 patent.

64. Carestream has been and is now directly infringing, literally and/or under the doctrine of equivalents, at least claim 14 of the '151 patent.

65. By way of illustration only, the CS 3700 and 3800 Scanning Systems meet each element of claim 14 of the '151 patent.

66. Carestream's CS 3700 and 3800 Scanning Systems are configured to perform "[a] method for determining shade of a patient's tooth." That method comprises "[1] obtaining a digital 3D representation of the tooth, where the digital 3D representation comprises shape data and texture data for the tooth; and [2] determining a tooth shade value for at least one point on the tooth based on the texture data of the corresponding point of the digital 3D representation and on known texture values of one or more reference tooth shade values, [3] wherein obtaining the digital 3D representation of the tooth comprises recording a series of sub-scans of the tooth, [4] where at least one of said sub-scans comprises both texture and geometry information for said

tooth, and [5] generating the digital 3D representation of the tooth from the recorded series of sub-scans.” (Ex. B at col. 22 l. 37 – 53.)

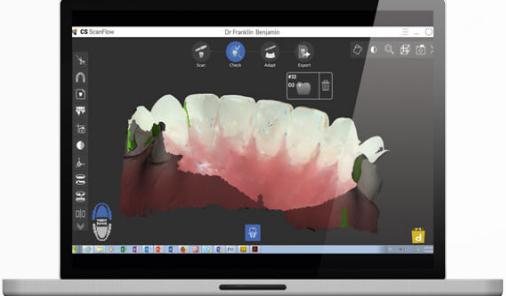
67. Public documentation about Carestream’s scanning system illustrate how the CS 3700 and 3800 Scanning Systems each satisfy all elements of representative claim 14 of the ’151 patent. By way of example only, the information from user guides, brochures, training videos, assorted webpages, and marketing documents some of which are reproduced below show that the Carestream scanners contain the infringing functionality.

68. Carestream’s CS 3700 and 3800 Scanning Systems perform a method that determines shade of a patient’s tooth.

**Drive better outcomes**

With next-level technology, exceptional versatility and improved scanning views, the CS 3700:

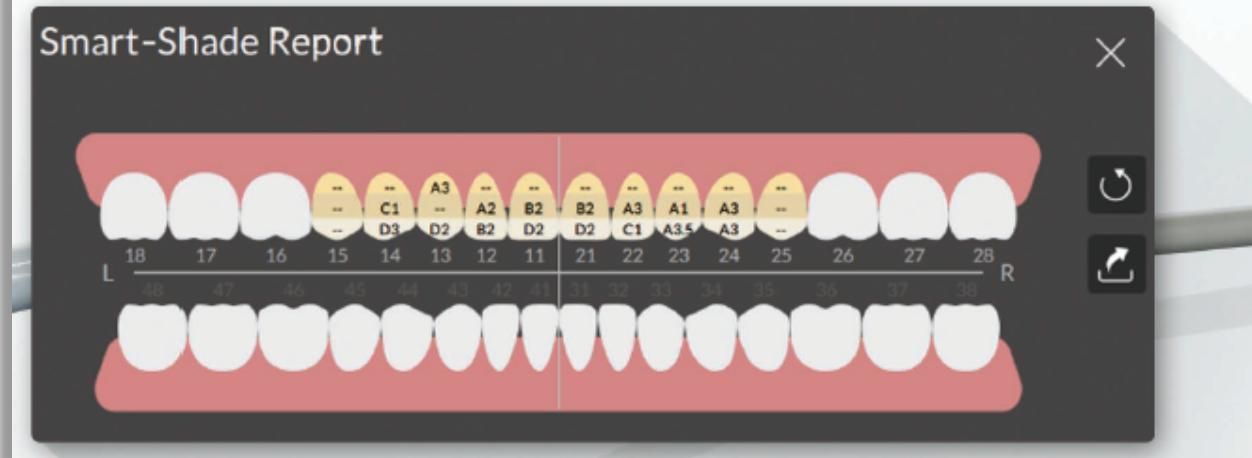
- Smart-shade matching automatically detects the enamel color of the scan area to identify the ideal match for optimum restorative outcomes
- Features hybrid scan capabilities, enabling you to merge a partial impression with a digital in vivo scan into a single file
- Provides a clearer view of the live scan, thanks to more scan space real estate



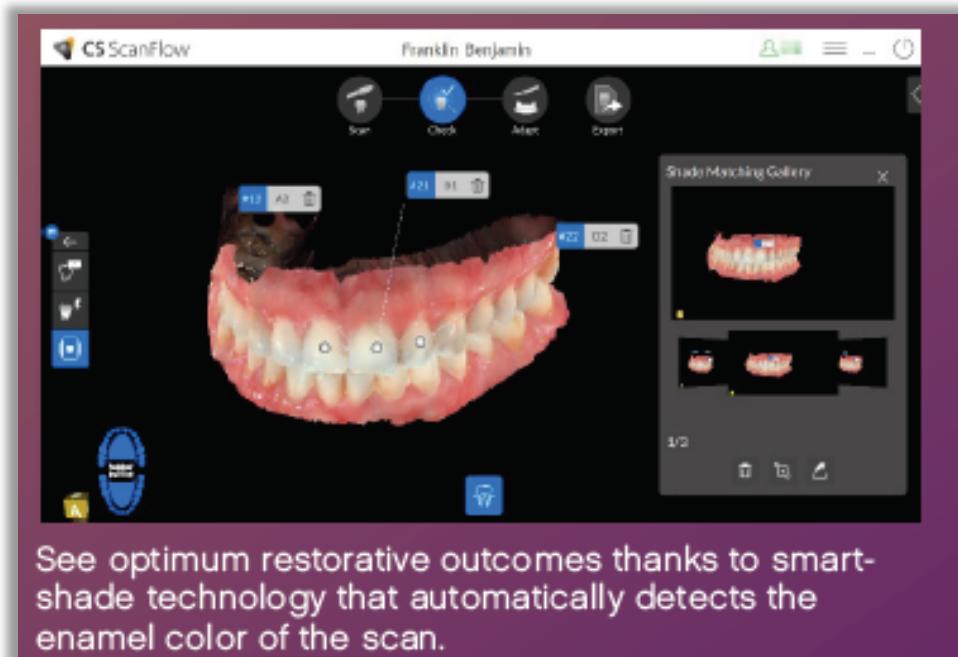
(See, e.g., CS 3800 Product Information (available at <https://www.carestreamdental.com/en-us/csd-products/intraoral-scanners/cs-3800>) (annotation added).)

### Smart-shade matching report.

In a single click, Smart-shade matching automatically generates a shade report for the selected area of interest, allowing users to easily share the outcome with the dental lab or referral.



(See, e.g., CS 3700 Product Brochure (“CS 3700 Brochure”) at 6 (available at <https://www.carestreamdental.com/en-us/resource-library/?type=Hardware&family=CS%203700&version=CS%203700.>.)



(See, e.g., CS 3800 Brochure at 9.)

69. Carestream's CS 3700 and 3800 Scanning Systems obtain a digital 3D representation of a tooth that includes shape data and texture data for the tooth. For example, the Carestream CS 3700 and 3800 Scanning Systems obtain a topology (shape) of the tooth along with the color of the tooth:

## Indications for Use

The CS 3800 is a digital optical scanning device used to record the topographic characteristics of teeth or dental impressions in three dimensions. The resulting topographic impressions are intended for use in the computer-aided design and manufacturing of dental restorative prosthetic devices, dental implant prosthetic devices, and orthodontic models.

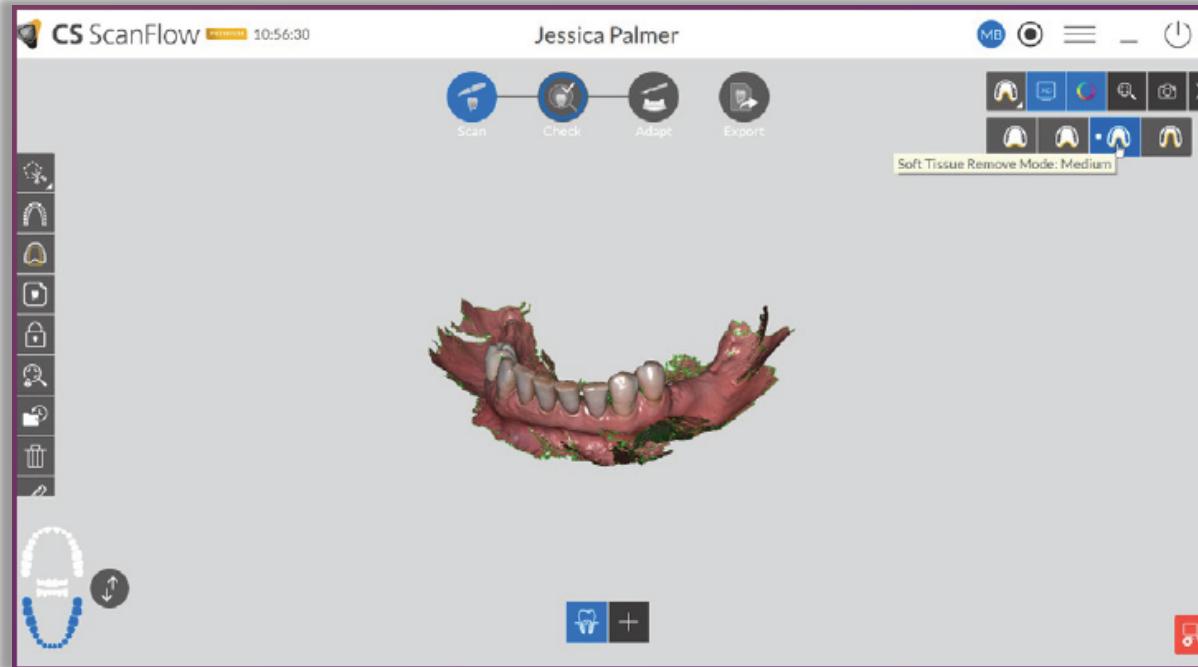
## Clinical Benefits and Performance Characteristics

Carestream Dental's intraoral scanners benefit a dental practice by enabling practitioners to acquire digital impressions with the quality and accuracy required for digital CAD/CAM dental applications. The actual performance of the device is dependent on the user's training and operating execution. The user is solely responsible for the accuracy, completeness, and adequacy of the acquired data.

(See, e.g., CS 3800 Safety and Regulatory Guide at 1.)



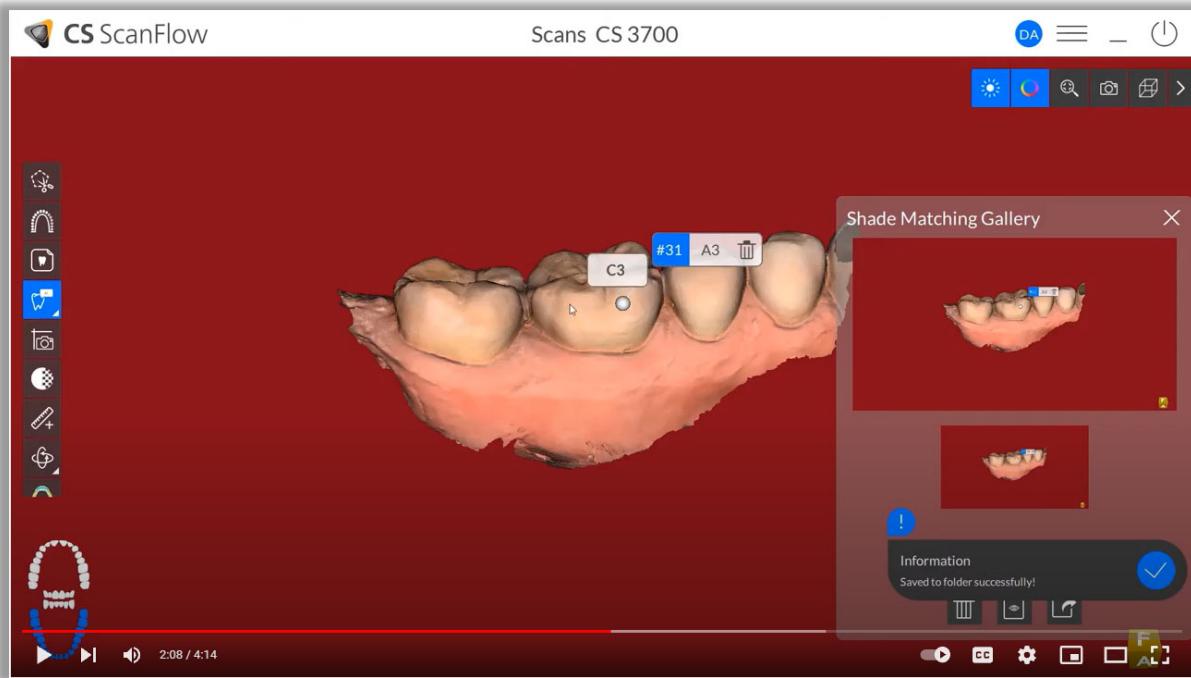
(See, e.g., CS 3800 Brochure at 3.)



(*Id.* at 9.)

70. Carestream's CS 3700 and 3800 Scanning Systems perform a method including a step of determining a tooth shade value for at least one point on the tooth based on the texture

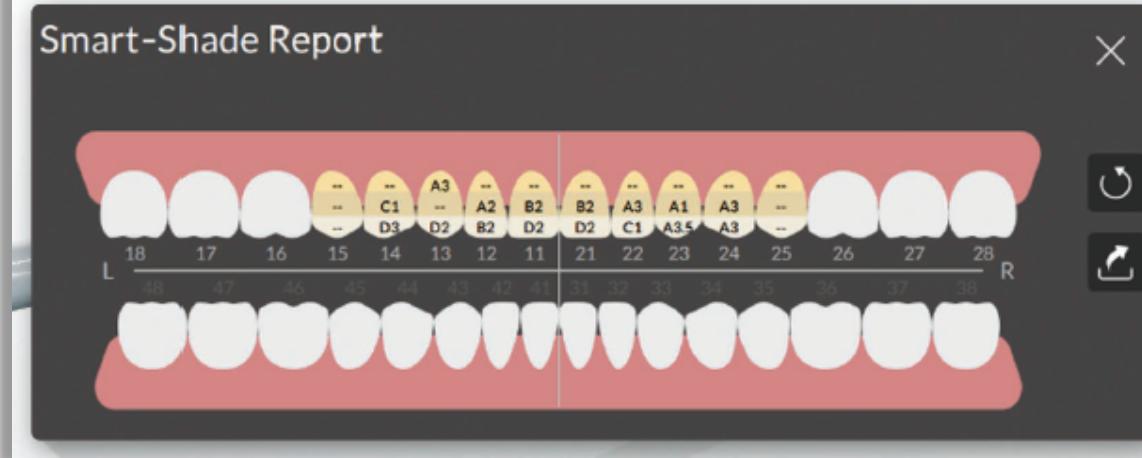
data of the corresponding point of the digital 3D representation and on known texture values of reference tooth shade values. For example, the Carestream CS 3700 and 3800 Scanning Systems include a shade matching functionality that is used to determine the tooth shade value based on a point selected on the color 3D representation:



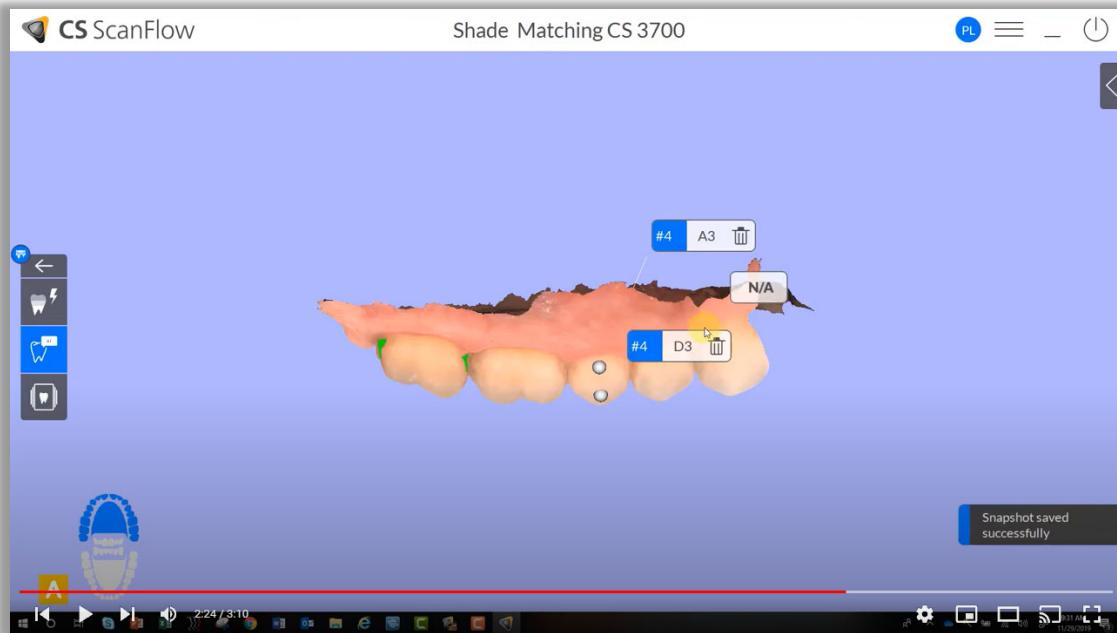
(See, e.g., Daniel Alman Provides an Overview of the 3700 with Smart-Shade Matching Technology in CS ScanFlow (“CS 3700 Overview”) (available at <https://www.youtube.com/watch?v=HPkkuoDwUeA>).

### Smart-shade matching report.

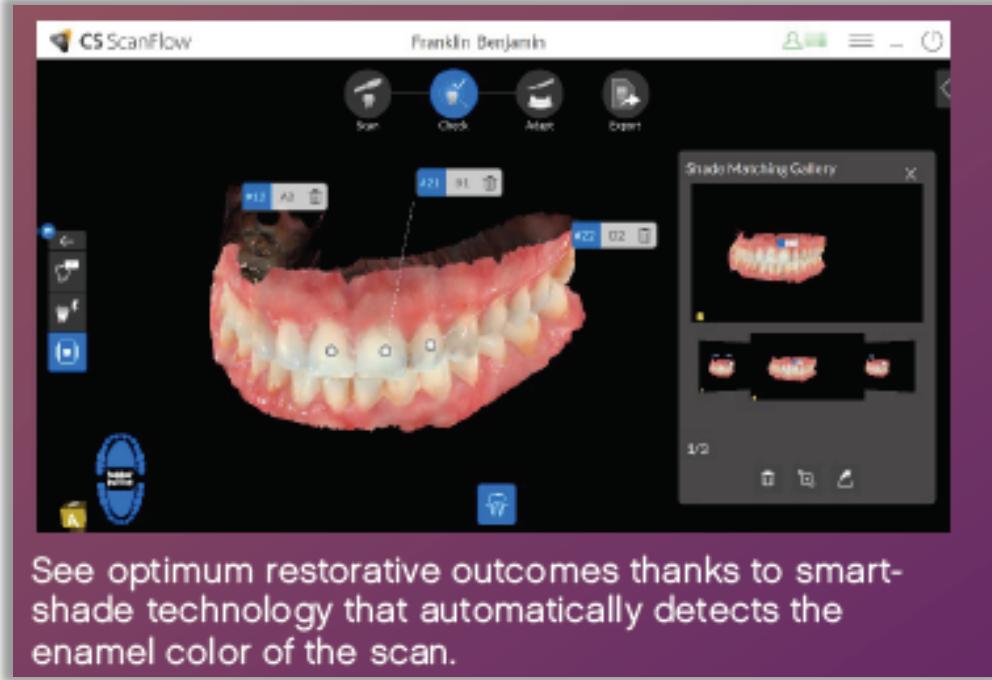
In a single click, Smart-shade matching automatically generates a shade report for the selected area of interest, allowing users to easily share the outcome with the dental lab or referral.



(See, e.g., CS 3700 Brochure at 6.)



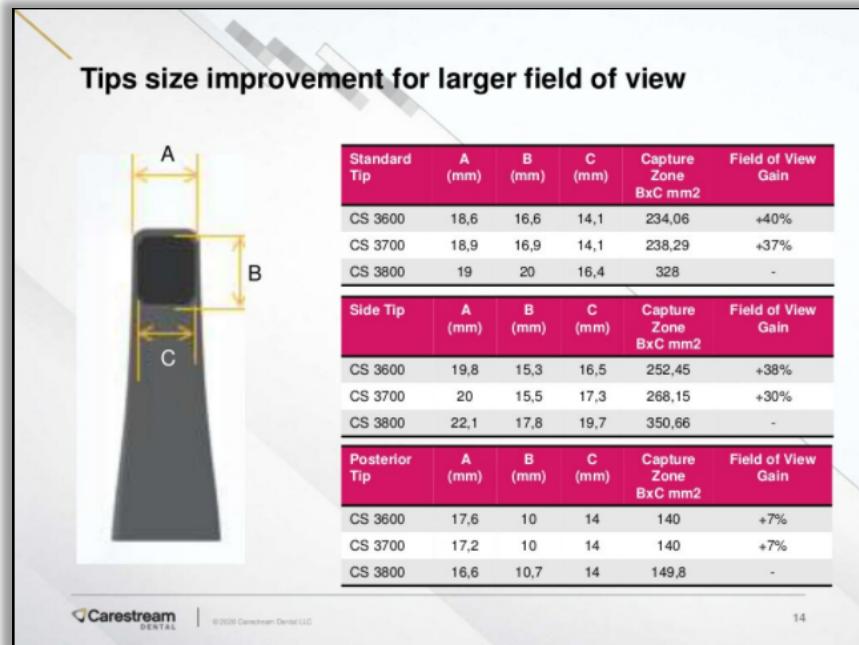
(See, e.g., Improve Restorative Outcomes with CS 3700, CS ScanFlow and Smart-Shade Technology (available at <https://www.youtube.com/watch?v=g-fd3P5-isQ>).(



See optimum restorative outcomes thanks to smart-shade technology that automatically detects the enamel color of the scan.

(See, e.g., CS 3800 Brochure at 9.)

71. The CS 3700 and 3800 Scanning Systems obtain the digital 3D representation of the tooth by recording a series of sub-scans that include texture information and geometry information, and generating the digital 3D representation of the tooth from the recorded series of sub-scans. For example, the CS 3700 and 3800 Scanning Systems have a limited field of view that requires recording a series of subscans in order to generate a digital 3D representation of the oral cavity.



(See, e.g., CS 3800 PowerPoint at slide 14.)

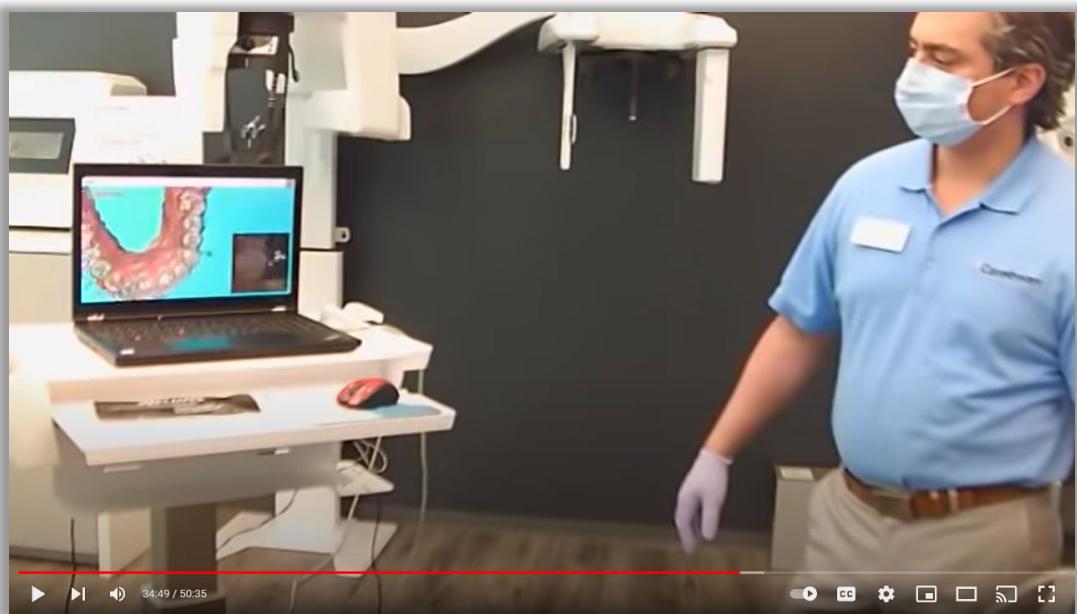


(See, e.g., CS 3700 Brochure at 4.)



(See, e.g., CS 3800 Self Scan Demonstration (available at

<https://www.youtube.com/watch?v=IZnORkUd7qs>).



(See, e.g., YouTube video – “Overview of digital scanners and live scan of the CS 3700 by

Carestream Dental” (available at <https://www.youtube.com/watch?v=XfiqevqEAZM>) (showing

sub-scan stitching and identifying areas for re-scanning, with each sub-scan containing texture and geometry information.)

# 4

## Acquiring a 3D Model Using the Common Scan Workflow

Begin by using the Common Scan workflow—the default workflow—to scan either a partial or full arch. For either type of scan, you should acquire images of the upper jaw, lower jaw, and the buccal bite registration. The software combines these images to create a 3D model. Once you have captured this

(See, e.g., CS ScanFlow User Guide at 41.)

72. Carestream has directly infringed the '151 patent, including by practicing the patented method by, e.g., using, testing, selling, offering for sale, and/or demonstrating the CS 3700 and CS 3800 Scanning Systems.

73. Carestream has had knowledge of the '151 patent from a date no later than the date of the filing of this Complaint. On information and belief, Carestream had knowledge of the '151 patent prior to the date of the filing of this Complaint by virtue of, e.g., prior business dealings between 3Shape and Carestream, as well as Carestream's own patent prosecution.

74. Carestream also actively induces and has induced infringement of the '151 patent under 35 U.S.C. §271(b), either literally or under the doctrine of equivalents, and continues to do so.

75. On information and belief, Carestream directs and/or authorizes its agents, customers, and/or potential customers to make, use, sell, or offer for sale in the United States or import into the United States, the Accused Products.

76. On information and belief, Carestream encouraged and facilitated infringement with specific intent and continues to encourage and facilitate infringement with specific intent by, for example, training its customers and potential customers to use the CS 3700 and 3800 Scanning Systems in a manner that infringes at least one claim of the '151 patent, promoting the use of the CS 3700 and 3800 Scanning Systems in a way that infringes at least one claim of the '151 patent to Carestream's customers and potential customers, and disseminating promotional and marketing material and product literature to those customers and potential customers encouraging use of the CS 3700 and 3800 Scanning Systems in a manner that infringes at least one claim of the '151 patent. For example, Carestream is aware that one or more methods claimed in the '151 patent is a method performed by the Accused Products and/or others that purchase and/or use the Accused products and, therefore, that purchasers and/or end users of the Accused Products have infringed and will infringe the '151 patent.

77. Carestream actively induces infringement of the '151 patent with knowledge and the specific intent to encourage that infringement by, *inter alia*, disseminating the CS 3700 and 3800 Scanning Systems and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides and technical information (including but not limited to the materials and videos identified in this Count of the Complaint) to third parties including but not limited to resellers, distributors, customers, potential customers, dentists, orthodontists, and/or other end users of the CS 3700 and CS 3800 Scanning Systems. Those third parties directly infringe the '151 patent at least by selling, offering to sell, and/or using the CS 3700 and 3800 Scanning Systems.

78. Carestream has been and contributing to the infringement of the '151 patent under 35 U.S.C. § 271(c), either literally or under the doctrine of equivalents, and continues to do so.

79. Carestream has actively, knowingly, and intentionally contributed to and continues to actively, knowingly, and intentionally contribute to the infringement of the '151 patent by selling or offering to sell, and continuing to sell or offer for sale the CS 3700 and 3800 Scanning Systems within the United States and/or by importing the CS 3700 and 3800 Scanning Systems into the United States with knowledge that the infringing technology is especially made and/or especially adapted for use in infringement of the '151 patent, is a material part of the patented invention, and is not a staple article or commodity of commerce suitable for substantial non-infringing use and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the CS 3700 and 3800 Scanning Systems do not have any substantial noninfringing uses. On information and belief, Carestream has such knowledge at least because it is aware the claimed features of the '151 patent are used by others including, but not limited to resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of CS 3700 and 3800 Scanning Systems.

80. On information and belief, Carestream knew or should have known of the '151 patent and has acted, and continues to act, in an egregious and wanton manner by infringing the '151 patent. On information and belief, Carestream's infringement of the '151 patent has been and continues to be willful and deliberate. 3Shape is a known pioneer in intraoral scanners with whom Carestream knows and has familiarity. On information and belief, Carestream knowingly developed, has sold, sells and offers to sell the Accused Products for use in an infringing manner that was known to Carestream or was so obvious that Carestream should have known of its infringement.

81. On information and belief, despite knowing its actions constituted infringement of the '151 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the '151 patent, Carestream nevertheless continued its infringing actions, and continues to make, use and sell the Accused Products after the filing of this complaint.

82. Carestream's acts of infringement have injured and damaged 3Shape and will continue to injure and damage 3Shape.

83. Carestream's actions have caused 3Shape to suffer irreparable harm resulting from the loss of its lawful patent rights and the loss of its ability to exclude others from making, using, selling, offering to sell and importing the Accused Products that have been and continue to be used to infringe the claims of the '151 patent. On information and belief, Carestream will continue these infringing acts unless enjoined by this court.

**COUNT III**  
**(Infringement of U.S. Patent No. 11,076,146)**

84. Plaintiff restates and realleges each of the foregoing paragraphs 1-83 of the Complaint as if fully set forth herein.

85. The '146 patent discloses inventions related to a 3D scanner apparatus and method for optical 3D scanning of surfaces, including teeth and surrounding soft tissue in a patient's oral cavity. For example, the '146 patent discloses capturing 2D images of a time-varying illumination pattern transmitted onto an object to determine the 3D geometry of the object. The '146 patent also discloses capturing 2D images of an object illuminated with different colors at different times and combining the different colors to obtain the color of the surface of the object.

86. Carestream has directly, literally and/or equivalently under the doctrine of equivalents, infringed at least one claim of the '146 patent under 35 U.S.C. §271(a), by making, using, selling, offering for sale in the United States and/or importing into the United States, without authority, the Accused Products, including at least the CS 3800 Scanning System. The Accused Products meet each and every element of one or more claims of the '146 patent.

87. Carestream has been and is now directly infringing, literally and/or under the doctrine of equivalents, at least claim 1 of the '146 patent.

88. By way of illustration only, the Accused Products, including at least the CS 3800 Scanning System, meets each element of claim 1 of the '146 patent.

89. The Carestream CS 3800 Scanning System includes “[a]n intraoral scanner for determining the 3D geometry and color of at least a part of the surface of an object in an oral cavity.” That scanner comprises “[1] at least one camera accommodating an array of sensor elements; [2] a pattern generator configured to generate, using a light source, a probe light with a plurality of configurations in the form of a time-varying illumination pattern; [3] an optical system for transmitting the probe light towards the object along an optical path thereby illuminating at least a part of the object with the time-varying illumination pattern, and for transmitting at least a part of the light returned from the object to the at least one camera to form a plurality of 2D images, wherein the 3D geometry is determined based on the plurality of 2D images and the time-varying illumination pattern; [4] a tip configured to be inserted into the oral cavity; and [5] a hardware processor configured to: [a] selectively switch a color of the probe light, thereby illuminating the object with different colors at different times; [b] record different images by the at least one camera at the different times, thereby recording images of the object with the different colors; [c] and combine the different colors from the different images, thereby

obtaining the color of the surface of the object, [6] wherein the intraoral scanner is wireless, and [7] wherein the at least one camera is a high-speed camera.” (Ex. C, 37:24-52.)

90. Public documentation about Carestream’s CS 3800 Scanning System illustrates how it satisfies all elements of claim 1 of the ’146 patent. By way of example only, the information from user guides, brochures, training videos, assorted webpages, and marketing documents some of which are reproduced below show that the CS 3800 Scanning System contains the infringing functionality.

91. The CS 3800 Scanning System includes an intraoral scanner for determining the 3D geometry and color of at least a part of the surface of an object in an oral cavity. For example, according to the CS 3800 Safety, Regulatory, and Technical Specifications User Guide, “[t]he CS 3800 is a digital optical scanning device used to record the topographic characteristics of teeth or dental impressions in three dimensions. The resulting topographic impressions are intended for use in the computer-aided design and manufacturing of dental restorative prosthetic devices, dental implant prosthetic devices, and orthodontic models.” CS 3800 Safety and Regulatory Guide at 1; *see also*, e.g., CS 3800 User Guide at 3 (providing that “[t]he CS 3800 is designed to acquire 3D still images” in lower jaw mode, upper jaw mode, and buccal bite registration mode).



(See, e.g., CS 3800 Scan Demo; *see also*, e.g., CS ScanFlow User Guide at 4.)

92. The CS 3800 Scanning System includes at least one camera accommodating an array of sensor elements. (See, e.g., Endless Freedom – The CS 3800 Intraoral Scanner (“Endless Freedom Webpage”) (*available at* <https://www.360v.co.uk/carestream-cs3800>) (providing “[t]he scanner can be used as an intraoral camera capturing vivid 2D intra-oral images—an ideal conversation starter with a patient. Videos extracted from the 3D datasets can also be used with patients to serve as a communication aid.”).)

TECHNICAL SPECIFICATIONS	
Components	Technical specifications
Sensor technology	1/2.9 inch CMOS
Illumination	LED: Red, Blue, Green
Field of view	16 x 14 mm 13 x 7 mm (posterior tip)
Depth of field	-2 to +16 mm

(See, e.g., CS 3800 Brochure at 12 (showing the CS 3800 Scanning System contains a CMOS sensor); *see also*, e.g., CS 3800 Safety and Regulatory Guide at 25-26.)

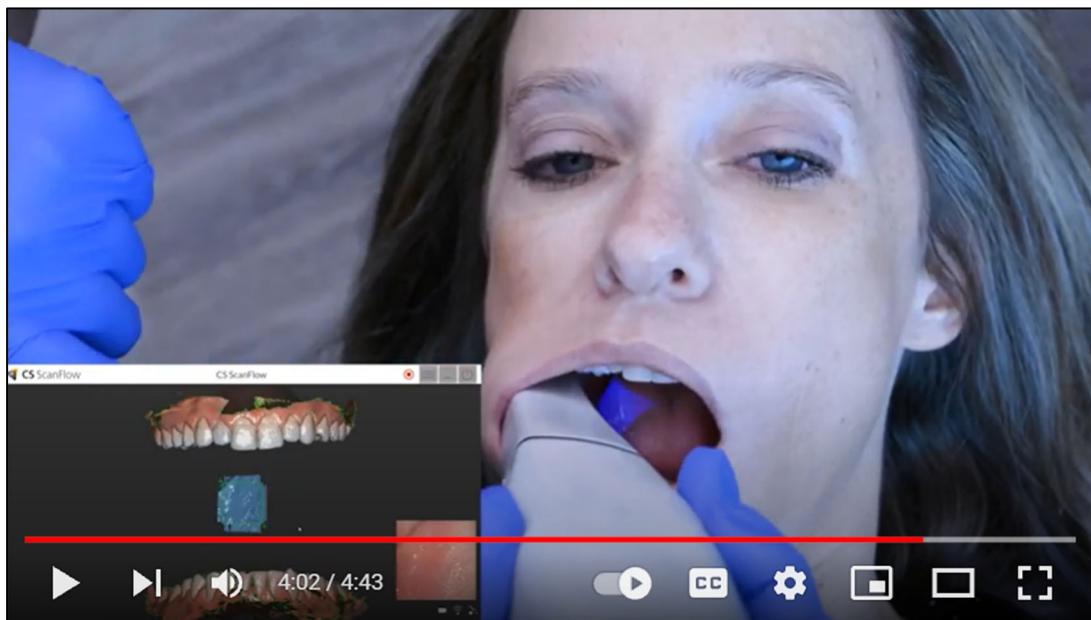
93. On information and belief, the CS 3800 includes a pattern generator configured to generate, using a light source, a probe light with a plurality of configurations in the form of a time-varying illumination pattern and an optical system for transmitting the probe light towards the object along an optical path thereby illuminating at least a part of the object with the time-varying illumination pattern, and for transmitting at least a part of the light returned from the object to the at least one camera to form a plurality of 2D images, wherein the 3D geometry is determined based on the plurality of 2D images and the time-varying illumination pattern.



(See, e.g., Showcasing the New CS 3800 Wireless Intraoral Scanner (“Showcasing the CS 3800”) (available at <https://www.youtube.com/watch?v=i9MTDGao9Tw>).



(See, e.g., CS 3800 Scan Demo.)



(Id.).

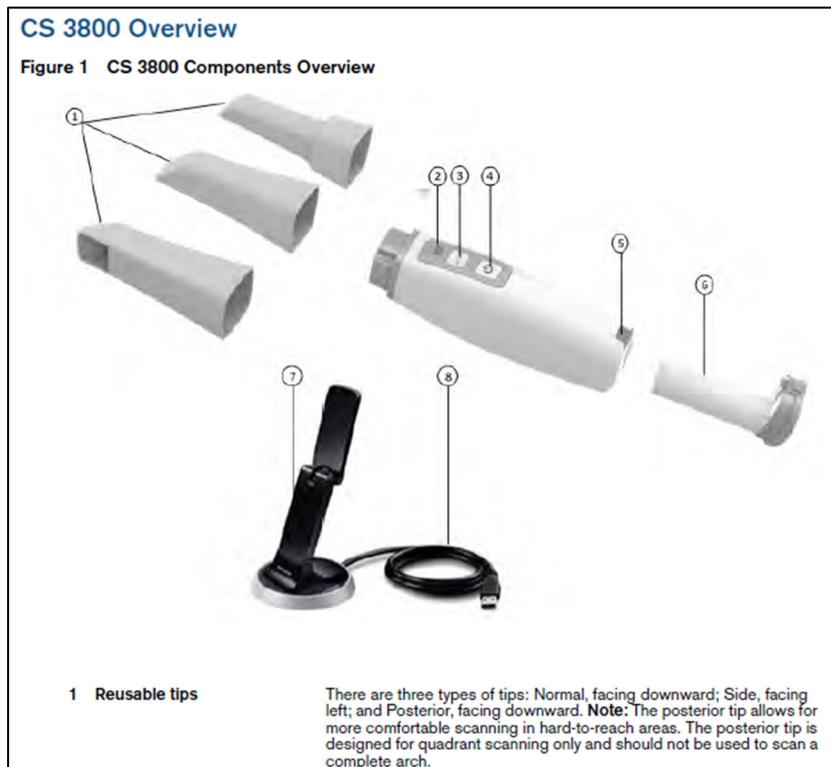
94. Carestream has represented that its intraoral scanners, including the CS 3700, “utilizes a pattern of structured light (lines or bars) to project onto the tooth surface as the illumination. The object distorts the pattern of light due to its surface shape, and the CS 3700 image processing and triangulation algorithms work in concert to utilize the altered light pattern to determine the shape and structure of the 3D object.” (See, e.g., Carestream White Paper:

Shades of Intelligence (“Shades of Intelligence White Paper”) at 9 (*available at <https://www.carestreamdental.com/en-us/resource-library/?type=Hardware&family=CS%203700&version=CS%203700>*.) On information and belief, the CS 3800 operates similarly to the CS 3700 in this respect.

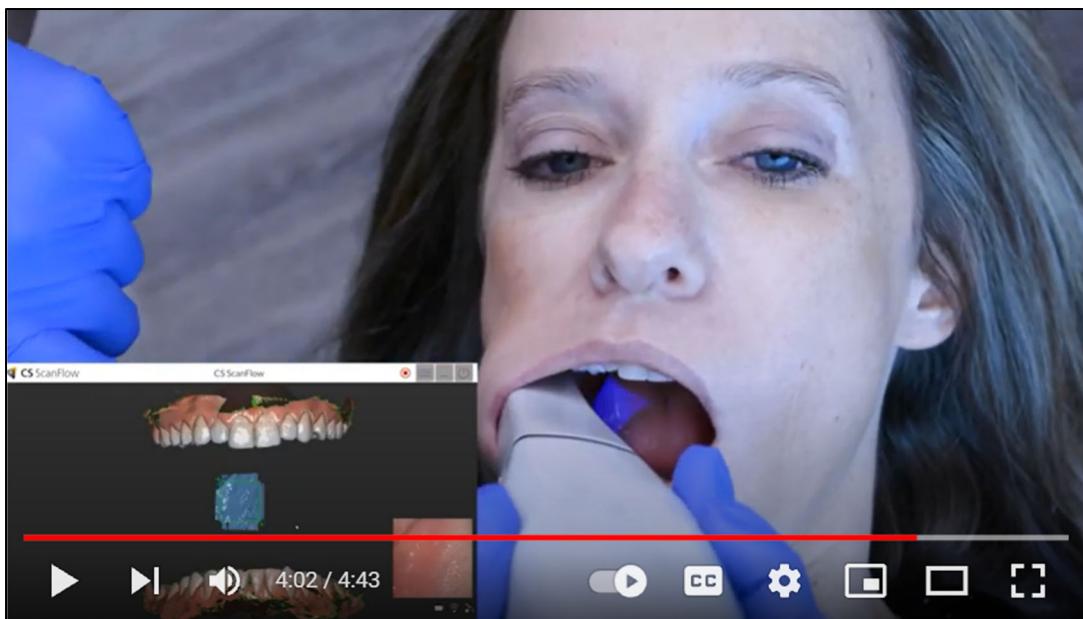
95. In particular, the pattern of structured light that is projected onto the tooth surface varies in time. For example, the lines or bars that are projected onto the tooth surface have varying width and spacing as shown for example, in the images of the Carestream CS3800 below:



96. The CS 3800 includes a tip configured to be inserted into the oral cavity.



(See, e.g., CS 3800 User Guide at 3.)

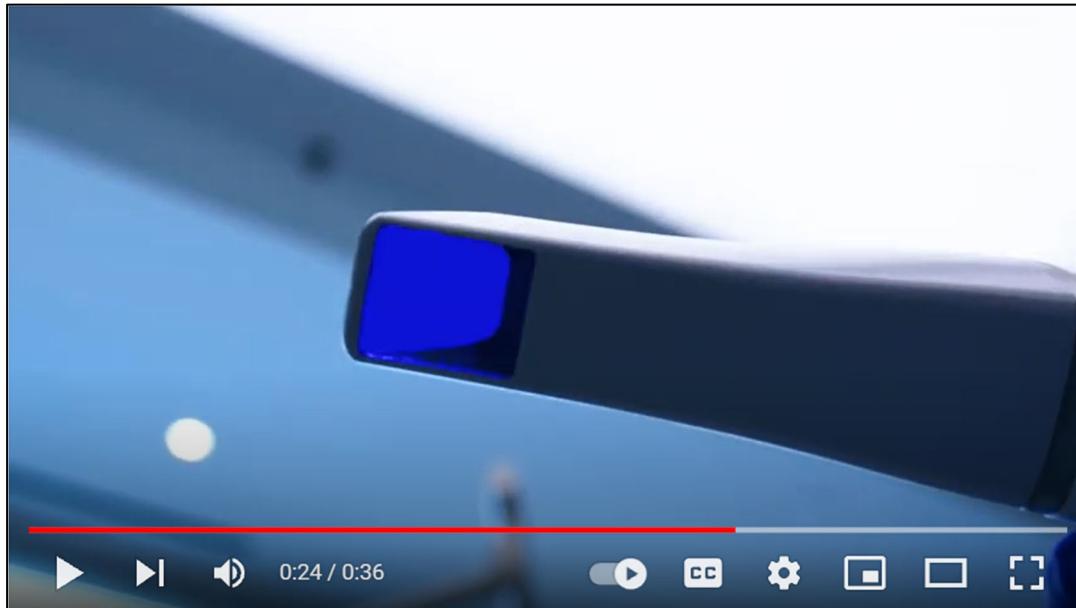


(See, e.g., CS 3800 Scan Demo)

97. On information and belief, the CS 3800 includes a hardware processor configured to: (a) selectively switch a color of the probe light, thereby illuminating the object with different colors at different times (*e.g.*, red, blue, green); (b) record different images by the at least one camera at the different times, thereby recording images of the object with the different colors; and (c) combine the different colors from the different images, thereby obtaining the color of the surface of the object. On information and belief, Carestream publicly demonstrated these aspects of the CS 3800 at the 2021 International Dental Show (“IDS”) in Cologne, Germany.

TECHNICAL SPECIFICATIONS	
Components	Technical specifications
Sensor technology	1/2.9 inch CMOS
Illumination	LED: Red, Blue, Green
Field of view	16 x 14 mm 13 x 7 mm (posterior tip)
Depth of field	-2 to +16 mm

(CS 3800 Brochure at 12; *see also* CS 3800 Safety and Regulatory Guide at 25-26.)



(*See, e.g.* Showcasing the CS 3800.)

98. For example, on information and belief, Carestream's CS 3800 Scanning System includes a hardware processor configured to selectively switch a color of the probe light, thereby illuminating the object with different colors at different times at least due to, *e.g.* Carestream's representation that its intraoral scanner systems, including the CS 3700, use a triangulation method that "can measure the tooth color properties of both varying illumination and detection angles along different paths." (*See, e.g.*, Shades of Intelligence White Paper at 8; *id.* at 9 ("In addition to active triangulation, the CS 3700 also utilizes BRDF, or bidirectional reflectance distribution function, to collect shade values from 3D surfaces factoring variations in lighting conditions. Unlike systems that capture the RGB value from a stored mesh, the CS 3700 measures the true material properties of the tooth without the influence of the scanner, resulting in more accurate color measurement. Thanks to triangulation, there is no strict orientation requirement, and the scanner can capture the tooth shade as the scanner orientation changes."); *see also, e.g.*, CS 3700 Overview at 0:15-1:02.) On information and belief, the CS 3800 operates similarly to the CS 3700 in this respect.

99. On information and belief, the CS 3800 records different images by the at least one camera at the different times, thereby recording images of the object with the different colors. *See, e.g.*, For example, "[t]he scanner can be used as an intraoral camera capturing vivid 2D intra-oral images." (*See, e.g.*, Endless Freedom Webpage.) The CS 3800 captures several frames per second and can scan a single arch of a patient's mouth in only 25 seconds. (*Id.*) During scanning, "[l]ive video is displayed on the video preview screen, and the acquisition begins. Images are automatically acquired and transferred to the 3D model display screen." (*See, e.g.*, CS ScanFlow User Guide at 42.)

**High Scan Speed**

A proven scanning time of 25 seconds for a single arch.\*

A larger field of view and deeper depth of field with more frames per second, and an optimized algorithm, makes it our fastest intraoral scanner yet.



Carestream DENTAL | Confidential. Update with final file name

\*Internal testing completed on a 3D model

(See, e.g., CS 3800 PowerPoint at slide 8.)

**CS 3800 Button function management**

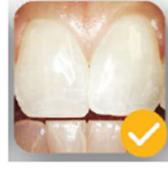
Button	Actions	Function
Mode Button	Short press during scan	Switch between upper/lower jaw and bite registration
	Short press during any sub-function like IO camera, cut ,etc.	Return to scan
	Long press for 3 second	Turn on/off the gesture control
Power Button	Long press for 3 second	Power On/Off the scanner
	Short press after power on	Enable/Disable light projection
	Short press during bite registration ( Manual bite enabled)	Enable bite capture
	Short Press during IO camera	Capture image

Carestream DENTAL | © 2020 Carestream Dental LLC

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(Id. at slide 27.)

100. On information and belief, the CS 3800 combines the different colors from the different images, thereby obtaining the color of the surface of the object. For example, Carestream has represented that its scanners, including the CS 3700, use a triangulation method and “BRDF, or bidirectional reflectance distribution function, to collect shade values from 3D surfaces factoring variations in lighting conditions. Unlike systems that capture the RGB value from a stored mesh, the CS 3700 measures the true material properties of the tooth without the influence of the scanner, resulting in more accurate color measurement. Thanks to triangulation, there is no strict orientation requirement, and the scanner can capture the tooth shade as the scanner orientation changes.” (See, e.g., Shades of Intelligence White Paper at 9; see also, e.g., CS 3700 Overview at 0:15-1:02.) On information and belief, the CS 3800 operates similarly to the CS 3700 in this respect.

<b>Texture-Based Shade Matching</b> Selects a single preferred geometry obtained from the scanned dataset	<b>BRDF<sup>12</sup></b> Processes all data directly from the tooth surface, factoring in all angles and changes in lighting intensity and direction
	

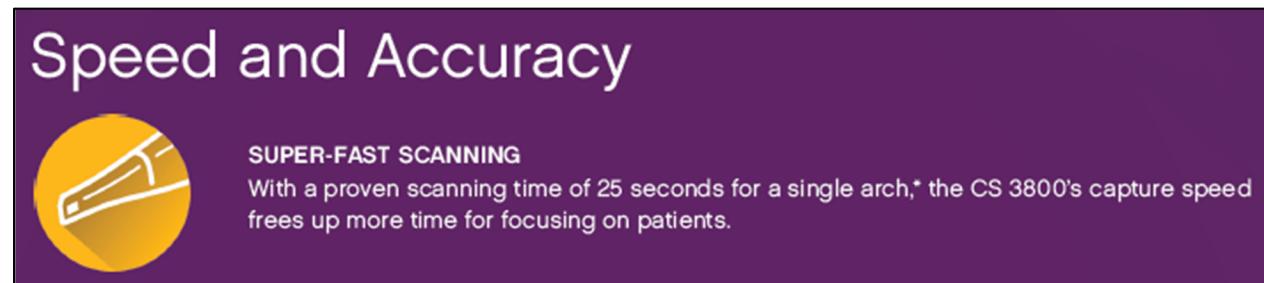
(Shades of Intelligence White Paper at 9.)

101. The CS 3800 Scanning System includes a wireless intraoral scanner.



(See, e.g., Endless Freedom Webpage.)

102. The CS 3800 Scanning System includes a high-speed camera.



(See, e.g., CS 3800 Brochure at 4.)

# Endless Freedom

The CS 3800 Intraoral Scanner

SUPER-FAST SCANNING with a proven scanning time of 25 seconds for a single arch, the CS 3800's capture speed frees up more time for focusing on patients.



**Wireless**

(See, e.g., Endless Freedom Webpage.)

## High Scan Speed

A proven scanning time of 25 seconds for a single arch.\*

A larger field of view and deeper depth of field with more frames per second, and an optimized algorithm, makes it our fastest intraoral scanner yet.



Carestream DENTAL | Confidential. Update with final file name

\*Internal testing completed on a 3D model

(See, e.g., CS 3800 PowerPoint at slide 8.)

103. Carestream has directly infringed the '146 patent, including by making, using, selling, offering for sale in the United States, and importing into the United States, products that

contain the intraoral scanner disclosed in the '146 patent. Further, Carestream uses the patented scanner, *e.g.*, by testing and/or demonstrating the CS 3800 Scanning System.

104. Carestream has had knowledge of the '146 patent from a date no later than the date of the filing of this Complaint. On information and belief, Carestream had knowledge of the '221 patent prior to the date of the filing of this Complaint by virtue of, *e.g.*, prior business dealings between 3Shape and Carestream.

105. Carestream has been on actual notice of its infringement of the '146 patent at least as of the date it received 3Shape's August 28, 2021 Letter. (Ex. D.)

106. Carestream also actively induces and has induced infringement of the '146 patent under 35 U.S.C. § 271(b), either literally or under the doctrine of equivalents, and continues to do so.

107. On information and belief, Carestream encouraged and facilitated infringement with specific intent and continues to encourage and facilitate infringement with specific intent by, for example, training its customers to use the CS 3800 Scanning System in a manner that infringes at least one claim of the '146 patent, promoting the use of the CS 3800 Scanning System in a manner that infringes at least one claim of the '146 patent to Carestream's customers, and disseminating promotional and marketing material and product literature to those customers encouraging use of the CS 3800 Scanning System in a manner that infringes at least one claim of the '146 patent. For example, Carestream is aware that the features claimed in the '146 patent are features in the Accused Products and are features used by others that purchase the Accused products and, therefore, that purchasers and/or end users of the Accused Products will infringe the '146 patent.

108. Carestream actively induces infringement of the '146 patent with knowledge and the specific intent to encourage that infringement by, *inter alia*, disseminating the CS 3800 Scanning System and providing promotional materials, marketing materials, training materials, instructions, product manuals, user guides and technical information (including but not limited to the materials and videos identified in this Count of the Complaint) to third parties including but not limited to resellers, distributors, customers, potential customers, dentists, orthodontists, and/or other end users of the CS 3800 Scanning System. Those third parties directly infringe the '146 patent at least by selling, offering to sell, and/or using the CS 3800 Scanning System.

109. Carestream has been and is now contributing to the infringement of the '146 patent under 35 U.S.C. § 271(c), either literally or under the doctrine of equivalents, and continues to do so.

110. Carestream has actively, knowingly, and intentionally contributed to and continues to actively, knowingly, and intentionally contribute to the infringement of the '146 patent by selling or offering to sell, and continuing to sell or offer for sale the CS 3800 Scanning System within the United States and/or by importing the CS 3800 Scanning System into the United States with knowledge that the infringing technology in the CS 3800 Scanning System is especially made and/or especially adapted for use in infringement of the '146 patent, is a material part of the patented invention, and is not a staple article or commodity of commerce suitable for substantial non-infringing use and with knowledge that others including, but not limited to, resellers, distributors, customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the CS 3800 Scanning System do not have any substantial noninfringing uses. On information and belief, Carestream has such knowledge at least because it is aware the claimed features of the '146 patent are used by others including, but not limited to resellers, distributors,

customers, dentists, orthodontists, dental and orthodontic labs, and/or other end users of the CS 3800 Scanning System.

111. On information and belief, Carestream knew or should have known of the '146 patent and has acted, and continues to act, in an egregious and wanton manner by infringing the '146 patent. On information and belief, Carestream's infringement of the '146 patent has been and continues to be willful and deliberate. 3Shape is a known pioneer in intraoral scanners with whom Carestream knows and has familiarity. On information and belief, Carestream knowingly developed, has sold, sells and offers to sell the Accused Products in an infringing manner that was known to Carestream or was so obvious that Carestream should have known of its infringement, and continues to do so.

112. 3Shape informed Carestream of its infringement of the '146 patent at least by virtue of its August 28, 2021 Letter (Ex. D), yet Carestream has continued to infringe the patent in an egregious and wanton manner that Carestream knew or should have known amounted to infringement of the patent.

113. On information and belief, despite knowing its actions constituted infringement of the '146 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the '146 patent, Carestream nevertheless continued its infringing actions, and continues to make, use and sell the Accused Products after the filing of this complaint.

114. Carestream's acts of infringement have injured and damaged 3Shape and will continue to injure and damage 3Shape.

115. Carestream's actions have caused 3Shape to suffer irreparable harm resulting from the loss of its lawful patent rights and the loss of its ability to exclude others from making,

using, selling, offering to sell and importing the inventions of the '146 patent. On information and belief, Carestream will continue these infringing acts unless enjoined by this court.

### **PRAYER FOR RELIEF**

**WHEREFORE**, 3Shape respectfully requests that this Court:

- a. enter a judgment that 3Shape is the owner of all right, title, and interest in and to the patents-in-suit, together with all the rights of recovery under such patents for past and future infringement thereof;
- b. enter a judgment that Carestream has infringed each of the patents-in-suit;
- c. enter a judgment that the patents-in-suit are valid and enforceable;
- d. permanently enjoin Carestream, their parents, subsidiaries, affiliates, agents, servants, employees, attorneys, representatives, successors and assigns, and all others in active concert or participation with them from infringing the patents-in-suit;
- e. order an award of damages to 3Shape in an amount adequate to compensate 3Shape for Carestream's infringement, said damages to be no less than a reasonable royalty;
- f. enter a judgment that the infringement was willful and treble damages pursuant to 35 U.S.C. § 284;
- g. order an accounting to determine the damages to be awarded to 3Shape as a result of Carestream's infringement, including an accounting for infringing sales not presented at trial and award additional damages for any such infringing sales.
- h. Assess pre-judgment and post judgment interest and costs against Carestream, together with an award of such interest and costs, in accordance with 35 U.S.C. § 284;
- i. Render a finding that this case is "exceptional" and award to 3Shape its costs, expenses and reasonable attorneys' fees, as provided by 35 U.S.C. § 285; and

j. grant such other and further relief as the Court may deem proper and just.

**DEMAND FOR JURY TRIAL**

3Shape hereby respectfully requests a trial by jury of all issues so triable, pursuant to FED. R. CIV. P. 38.

Date: October 26, 2021

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Respectfully submitted,

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